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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/659,819

09/11/2003

Eric D. Groen

X-1357 US

5953

24309

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03/30/2005

XILINX, INC
ATTN: LEGAL DEPARTMENT
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SAN JOSE, CA 95124

EXAMINER

SHINGLETON, MICHAEL B

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/659,819	GROEN ET AL.	
	Examiner	Art Unit	
	Michael B. Shingleton	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-8 is/are allowed.
- 6) ☒ Claim(s) 9-13, 15-19 and 21-38 is/are rejected.
- 7) ☒ Claim(s) 14 and 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1-16-2004</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9, 11, 12, and 15 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Ishibashi 5,764,110 (ISHIBASHI).

Figure and the relevant text of ISHIBASHI discloses a method for “producing an oscillation” and device that produces oscillations. This includes receiving a control signal VIN and producing a “steady state bias signal” based on the control voltage. (Note the bias signal applied to elements like 21.1). Ishibashi also discloses producing a “transient bias signal” responsive to the control voltage VIN. (Note the signal applied to elements like element 25.1). No specific definition is given for the terms “steady state bias signal” and “transient bias signal” and thus a broad and reasonable interpretation in light of the specification is that described above. Also note Figure 8 of the instant application wherein the signals that are applied to the upper and lower power supply transistors of the ring oscillator form the signals mentioned above. ISHIBASHI shows the same type of structure and sinks and sources current like that of applicant’s invention. Because that this is the same type of structure, the bias signals mentioned above a “summed” as claimed to produce a frequency adjusted bias signal and the oscillations are clearly based in this summation. The biasing circuits mentioned above form the “first” and “second” bias circuits as recited in the some of the device claims of the instant application. Applicant just uses different terminology to describe the same items.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, 13, 16, 18, 19, 21, 22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi 5,764,110 (ISHIBASHI).

ISHIBASHI as applied in the above 35 USC 102 rejection involving ISHIBASHI and the following: ISHIBASHI is silent on the differences in the magnitudes of the two bias signals. However, it is well-known that P-channel and N-channel transistors that make up the current sinks and sources have different requirements. Furthermore, the selection of the magnitudes of the bias signals within the optimum or workable range is merely the selection of the result effective variable wherein this selection determines how much current is sourced or sinked. ISHIBASHI is also silent on the filtering of the bias signals. It is well known to filter bias signals to as to reduce the effects of noise. Furthermore the selection of 1kHz for the corner frequency is merely the selection of the optimum or workable range that involves routine skill in the art. This is a result effective variable that determines how much noise is filtered. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided filters for the bias signals of ISHIBASHI at a corner frequency of approximately 1kHz so as to reduce the effects of noise as is well known in the art with the selection of 1kHz involving but routine skill in the art as this is the selection of the optimum or workable range. Note that the bias signals of ISHIBASHI are DC currents that qualifies as "low frequency". ISHIBASHI is silent on the use of high gain current mirrors. However, this is a result effective variable in that it determines the bias current for the oscillator and is merely the selection of the optimum or workable range. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the gain of the current mirrors of ISHIBASHI to be high gain as this selection is the selection of the optimum or workable range that involves routine skill in the art. Note element 30 forms a transconductance stage.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen the bias signals to differ from each other by any amount because as the SHEN and ISHIBASHI references are silent on the exact magnitude difference, one of ordinary skill in the art would have been motivated to make the difference to be any amount within the workable range including several orders of magnitudes as this is merely controlling the result effective variable of how much current to source and/or sink which involves but routine skill in the art.

Claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nam et al. 6,597,614 (NAM) in view of Ishibashi 5,764,110 (ISHIBASHI).

Figure 3 and the relevant text of NAM discloses a ring oscillator structure having means for generating a low frequency bias signal Nd3 and the a "steady state bias signal" Nd2 wherein the low

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frequency bias signal compensates for process and temperature variations (See column 4, around line 10). Note that process variations can cause temperature variations and since NAM clearly compensates for temperature variations this clearly includes compensating for process variations as well. The claims are not specific on what process variations are compensated for. Also no specific definition is given for the terms "low frequency bias signal" and "steady state bias signal". As such a fair and reasonable interpretation of these terms would include the bias signals of NAM. NAM is also silent on the filtering of the bias signals. It is well known to filter bias signals to as to reduce the effects of noise. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided filters for the bias signals of NAM so as to reduce the effects of noise as is well known in the art. As to the use of the NAM device as a VCO, this is one common usage for a ring oscillator. Note the VIN signal and the current mirrors and the transconductance stage 30 of ISHIBASHI.

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the biasing means of NAM with a transconductance stage followed by current mirrors so as to form a VCO out of a ring oscillator as taught by ISHIBASHI.

Claims 23-30, 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shen 6,031,429 (SHEN) in view of Ishibashi 5,764,110 (ISHIBASHI).

SHEN discloses the basic pll having a phase frequency detector 12, a loop filter 18, a charge pump 16 that sources or sinks current to the loop filter and a VCO 14. SHEN is silent on the details of the VCO.

ISHIBASHI discloses a conventional VCO having the claimed VCO structure as noted in the 35 USC rejection above involving ISHIBASHI. Note the mirroring devices 27, 28 and 29 of ISHIBASHI.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have replace the VCO of SHEN with that of ISHIBASHI because as the SHEN reference is silent on the exact VCO employed one of ordinary skill in the art would have been motivated to use an y art-recognized equivalent VCO circuit such as the conventional VCO circuitry of ISHIBASHI.

ISHIBASHI is silent on the differences in the magnitudes of the two bias signals. However, it is well known that P-channel and N-channel transistors that make up the current sinks and sources have different requirements. Furthermore, the selection of the magnitudes of the bias signals within the optimum or workable range is merely the selection of the result effective variable wherein this selection determines how much current is sourced or sinked. ISHIBASHI is also silent on the filtering of the bias signals. It is well known to filter bias signals to as to reduce the effects of noise. Furthermore the selection of 1kHz for the corner frequency is merely the selection of the optimum or workable range that involves routine skill in the art. This is a result effective variable that determines how much noise is

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filtered. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided filters for the bias signals of ISHIBASHI at a corner frequency of approximately 1kHz so as to reduce the effects of noise as is well known in the art with the selection of 1kHz involving but routine skill in the art as this is the selection of the optimum or workable range. Note that the bias signals of ISHIBASHI are DC currents that qualifies as "low frequency".

Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen the bias signals to differ from each other by any amount because as the SHEN and ISHIBASHI references are silent on the exact magnitude difference, one of ordinary skill in the art would have been motivated to make the difference to be any amount within the workable range including several orders of magnitudes as this is merely controlling the result effective variable of how much current to source and/or sink which involves but routine skill in the art.

Claims 1-8 are allowable over the art of record.

Claims 14 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571)272-1770.

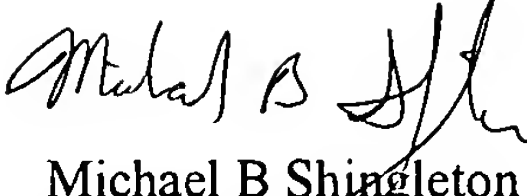
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS
March 18, 2005

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Michael B Shingleton
Primary Examiner
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